

REMARKS

Reconsideration of the October 7, 2002 Official Action is respectfully requested.

Claims 1-31, as amended, and new Claims 32-35 are pending in the application for the Examiner's review and consideration.

Claims 1-4, 6-8, 11-18, 20-24, 26 and 29-31 have been amended to recite a filter comprising an intermetallic reagent. Support for this change can be found on page 1, lines 3-4 of the specification as originally filed. As no new matter has been introduced, the amended claims should be entered at this time. New independent Claims 32-34 present original Claims 6, 27 and 28, respectively, in independent form.

The disclosure was objected to for the reasons cited on pages 2-3 of the Official Action. The disclosure has been amended to include a brief description of the filed drawings and to provide antecedent basis for the terminology recited in Claims 2, 6-7, 14-15, 21-22, 27-28 and 30-31. Accordingly, withdrawal of this objection is requested.

Claims 1-2, 13-14 and 20-22 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,193,412 to Heim et al. ("Heim"). The reasons for the rejection are set forth in numbered paragraph 1 on page 3 of the Official Action. This rejection is respectfully traversed.

In order to establish anticipation under §102(b), all elements of the claim must be found in a single reference. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 231 USPQ 81, 90 (Fed. Cir. 1986), *cert. denied*, 107 S. Ct. 1606 (1987). In particular, as pointed out by the court in *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 220 USPQ 303, 313 (Fed. Cir. 1981), *cert. denied*, 469 U.S. 851 (1984), "anticipation requires that each and every

element of the claimed invention be disclosed in a prior art reference." In the present case, Heim clearly fails to anticipate or render obvious the claimed subject matter.

Claim 1 recites a filter comprising an *intermetallic reagent* which binds with a gaseous component of a gas stream to remove said gaseous component from said gas stream. Independent Claim 13 recites a method of manufacturing a filter which is useful for removing a gaseous component of a gas stream, comprising incorporating an *intermetallic reagent* in a filter, the intermetallic reagent being effective to bind with a gaseous component of a gas stream sufficiently to selectively remove the gaseous component from the gas stream. Independent Claim 20 recites a method of removing a gaseous component from a gas stream, comprising passing the gas stream in contact with a filter comprising an *intermetallic reagent* which binds with a gaseous component of the gas stream and removes said gaseous component from the gas stream.

Heim discloses an additive for tobacco products which comprises an intimate mixture of at least two highly dispersed metal *oxides*, metal *oxyhydrates* or mixtures thereof (See abstract). Heim does not disclose a filter comprising an intermetallic reagent. The disclosed additive of Heim is a mixture of metal oxides and/or oxyhydrates of aluminum, calcium, magnesium, silicon and/or titanium (See column 1, lines 42-51 and column 2, lines 60-63). Heim is completely silent as to an intermetallic reagent. Thus, it is submitted at least for the reasons discussed above that Claims 1-2, 13-14 and 20-22 are clearly patentable over Heim.

Claims 1, 3, 12-13, 20, 23, 26, and 29-31 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,656,153 to Wennerberg ("Wennerberg"). The

reasons for the rejection are set forth in numbered paragraph 2 on page 4 of the Official Action. This rejection is respectfully traversed.

Wennerberg discloses a porous active carbon containing a uniform distribution of a *metal or metal-containing material* (See abstract). Preferably, the metal-containing material is a metal oxide (See column 7, lines 23-24). Wennerberg is completely silent as to an intermetallic reagent. Thus, it is submitted at least for the reasons discussed above that independent Claims 1, 13 and 20 as well as all the claims dependent therefrom are clearly patentable over Wennerberg.

Claims 1-2, 7-8, 13-15, 20-22 and 30-31 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,083,579 to Vanin et al. ("Vanin"). The reasons for the rejection are set forth in numbered paragraph 3 on page 4 of the Official Action. This rejection is respectfully traversed.

Vanin discloses an absorbing agent comprising a complex compound of ferrous iron and low-molecular ligands (See abstract). Vanin discloses a cigarette filter comprising a base of acetate, cellulose or acetate-cellulose fibers and an absorbing agent comprising a complex compound of ferrous iron and a mono thiol-containing low-molecular ligand (See column 2, lines 4-40). However, the complex compound of Vanin is not an intermetallic and Vanin does not disclose or suggest a filter comprising an intermetallic reagent, as recited in Claims 1, 13 and 20. Thus, it is submitted for at least the reasons discussed above that Claims 1-2, 7-8, 13-15, 20-22 and 30-31 are clearly patentable over Vanin.

Applicants respectfully submit that Heim, Wennerberg and Vanin do not disclose or suggest a filter comprising an intermetallic reagent and therefore independent Claims 1, 13

and 20, as well as all the claims dependent therefrom, are clearly patentable over the cited references.

Claims 3-5, 8-10, 12, 16-19, 23-26 and 29 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Heim. The reasons for the rejection are set forth in numbered paragraph 4 on pages 5-6 of the Official Action. Claims 3-5, 8-10, 12, 16-19, 23-26 and 29 depend from Claims 1, 13 and 20 and are deemed patentable at least for the reasons that Claims 1, 13 and 20 are patentable over Heim.

Claims 4, 8-9, 11, 17-19 and 24 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Wennerberg. The reasons for the rejection are set forth in numbered paragraph 5 on page 6 of the Official Action. Claims 4, 8-9, 11, 17-19 and 24 depend from Claims 1, 13 and 20 and are deemed patentable over the cited reference for at least the reasons that Claims 1, 13 and 20 are patentable over Wennerberg.

It is submitted that the differences between the claimed subject matter and the prior art are such that the claimed subject matter, as a whole, would not have been obvious at the time the invention was made to a person having ordinary skill in the art.

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In view of the foregoing, it is submitted that the present application is in condition for allowance and such action is earnestly solicited.

Respectfully submitted,

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Appendix A - Marked up Version of the Claims

1. (As amended) A filter comprising [a metal] an intermetallic reagent which binds with a gaseous component of a gas stream to remove said gaseous component from said gas stream.
2. (As amended) The filter according to claim 1, wherein the filter comprises a cigarette filter attached to a tobacco rod by tipping paper or the [metal] intermetallic reagent is incorporated in one or more cigarette filter parts selected from the group consisting of [tipping paper,] shaped paper insert, a plug, a space, or a free-flow sleeve.
3. (As amended) The filter according to claim 1, wherein the [metal] intermetallic reagent selectively binds to unsaturated hydrocarbons in the gas stream.
4. (As amended) The filter according to claim 1, wherein the [metal] intermetallic reagent comprises nanometer or micrometer size clusters of a transition metal or alloy containing a transition metal or a transitional metal salt.
6. (As amended) The filter according to claim 4, wherein said [metal] intermetallic reagent is incorporated in cigarette filter paper located within a free-flow filter, the filter

paper optionally having a three-dimensional shape and/or the filter paper being a liner on the interior of a hollow tubular element.

7. (As amended) The filter according to claim 1, wherein said [metal] intermetallic reagent is incorporated with cellulose acetate fibers and/or polypropylene fibers forming a plug or a free-flow filter element.

8. (As amended) The filter according to claim 4, wherein said [metal] intermetallic reagent is incorporated in or on a support material.

11. (As amended) The filter according to claim 1, wherein said [metal] intermetallic reagent comprises nanometer or micrometer size clusters of an iron aluminide or a titanium aluminide.

12. (As amended) The filter according to claim 1, wherein a metal atom of the [metal] intermetallic reagent binds to a C-H bond and/or a C-C bond of the gaseous component.

13. (As amended) A method of manufacturing a filter which is useful for removing a gaseous component of a gas stream, comprising steps of:

incorporating [a metal] an intermetallic reagent in a filter, the [metal] intermetallic reagent being effective to bind with a gaseous component of a gas stream sufficiently to selectively remove the gaseous component from the gas stream.

14. (As amended) The method according to claim 13, further comprising attaching the filter to a tobacco rod with tipping paper or the [metal] intermetallic reagent is incorporated in one or more cigarette filter parts selected from the group consisting of [tipping paper,] shaped paper insert, a plug, a space, or a free-flow sleeve.

15. (As amended) The method according to claim 14, further comprising a step of attaching the filter paper within a free-flow filter of a cigarette such as by forming said filter paper into a three-dimensional shape or attaching said filter paper as a liner on the interior of a hollow tubular element or combining said [metal] intermetallic reagent with fibers and forming a filter element from said [metal] intermetallic reagent and fibers or combining said [metal] intermetallic reagent with cellulose and/or polypropylene fibers and forming a plug or free-flow filter element or incorporating said [metal] intermetallic reagent in a cavity of said filter.

16. (As amended) The method according to claim 13, wherein the [metal] intermetallic reagent is effective for removing unsaturated hydrocarbons including 1,3-butadiene, isoprene and/or toluene from the gas stream.

17. (As amended) The method according to claim 13, wherein the [metal] intermetallic reagent comprises nanometer or micrometer size clusters of a transition metal or alloy containing a transition metal or a transitional metal salt.

18. (As amended) The method according to claim 17, further comprising a step of loading said [metal] intermetallic reagent in or on a support material forming a filter element of the filter.

20. (As amended) A method of removing a gaseous component from a gas stream, comprising passing the gas stream in contact with a filter comprising [a metal] an intermetallic reagent which binds with a gaseous component of the gas stream and removes said gaseous component from the gas stream.

21. (As amended) The method according to claim 20, further comprising steps of forming the gas stream by burning tobacco and directing tobacco smoke through the filter such that the component of the gas stream to be removed is brought into contact with the [metal] intermetallic reagent and prevented from reentering the gas stream.

22. (As amended) The method according to claim 21, wherein the [metal] intermetallic reagent is incorporated in one or more cigarette filter parts selected from the group consisting of filter paper, [tipping paper,] shaped paper insert, a plug, a space, or a free-flow sleeve, the tobacco smoke being passed through the one or more filter parts.

23. (As amended) The method according to claim 20, wherein the [metal] intermetallic reagent is effective to selectively remove unsaturated hydrocarbons present in the gas stream.

24. (As amended) The method according to claim 20, wherein the [metal] intermetallic reagent comprises nanometer or micrometer size clusters of a transition metal or alloy containing a transition metal or a transitional metal salt.

26. (As amended) The method according to claim 20, wherein the [metal] intermetallic reagent is incorporated in or on a support material selected from the group consisting of silica gel, porous carbon or a zeolite.

29. (As amended) The method according to claim 20, wherein a metal atom of the [metal] intermetallic reagent binds to a C-H bond and/or a C-C bond of the gaseous component.

30. (As amended) The filter according to Claim 1, wherein the [metal] intermetallic reagent is a non-oxide [metal] intermetallic reagent or a crystalline [metal] intermetallic reagent.

31. (As amended) The method according to Claim 13, wherein the [metal] intermetallic reagent is a non-oxide [metal] intermetallic reagent or a crystalline [metal] intermetallic reagent.